



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/652,660	08/28/2003	Harukazu Watanabe	1232-5123	1886

27123	7590	12/14/2007
MORGAN & FINNEGAN, L.L.P. 3 WORLD FINANCIAL CENTER NEW YORK, NY 10281-2101		

EXAMINER	
LEUNG, CHRISTINA Y	

ART UNIT	PAPER NUMBER
2613	

NOTIFICATION DATE	DELIVERY MODE
12/14/2007	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

PTOPatentCommunications@Morganfinnegan.com
Shopkins@Morganfinnegan.com
jmedina@Morganfinnegan.com

Office Action Summary

Application No.

10/652,660

Applicant(s)

WATANABE, HARUKAZU

Examiner

Christina Y. Leung

Art Unit

2613

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 October 2007 and 26 November 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2 and 4-7 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2 and 4-7 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- ☐ Notice of Informal Patent Application
- ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 25 October 2007 has been entered.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. **Claims 1, 2, and 4-7** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Korevaar** (US 5,777,768 A).

Regarding **claims 1 and 2**, Korevaar discloses a free space optics communication apparatus which performs communication with another apparatus with light beams (Figures 3, 4A-B, and 5A-B), comprising:

a plurality of light-emitting units 26, each of the units emitting a light beam 20 which forms a generally elliptical irradiation pattern on the other apparatus (column 8, lines 7-8),

wherein the plurality of light-emitting units 26 are set such that irradiation patterns of light beams 20 from at least two of the plurality of light-emitting units overlap in the shorter diameter direction of the irradiation pattern of the light beam from the one light-emitting unit at a

Art Unit: 2613

light-receiving unit of the other apparatus (for example, see irradiation patterns 78a and 78b as shown in Figure 5B; column 6, lines 16-22; column 8, lines 4-8; column 9, lines 29-36), and

respective optical axes of the plurality of light-emitting units are inclined with respect to a reference axis of the free space optical communication apparatus (Figure 5A shows light-emitting units 26a and 26b having optical axes that are “inclined” with respect to a reference axis of the communication apparatus at least in the sense that the optical axis of the light emitting units are inclined by 90 degrees relative to a reference axis comprising the direction of light output from the apparatus shown in Figure 5A as a whole)

so that a width of a combined irradiation pattern formed by combining the light beams from the plurality of light-emitting units in a shorter diameter direction of an irradiation pattern of a light beam from one of the plurality of light-emitting units is larger than a width in the shorter diameter direction of the irradiation pattern of the light beam from the one light-emitting unit (the overlapping elliptical beams disclosed by Korevaar inherently have a combined width of beams that is larger by some amount than a width of one beam).

Examiner respectfully notes that Korevaar discloses that “irradiation patterns of light beams from at least two of the plurality of light-emitting units overlap in the shorter diameter direction of the irradiation pattern” at least in the sense that they disclose an arrangement of two elliptical irradiation patterns 78a and 78b as shown in Figure 5B which, given the divergence of the beams expressly disclosed by Korevaar, eventually “overlap in the shorter diameter direction of the irradiation pattern” at the receiver. The elliptical irradiation patterns 78c and 78d shown in Figure 5B also diverge and overlap in the shorter diameter direction of the irradiation pattern at the receiver.

Further regarding claims 1 and 2, Korevaar discloses overlapping beams and discloses a combined width of beams that is larger by some amount than a width of one beam, but Korevaar does not specifically disclose a particular ratio of the combined width to the width of one beam and does not specifically disclose that the combined width is 1.5 times, or 2 times, or more than a width of one beam.

However, Korevaar does clearly suggest that the amount of overlap and resulting width ratio of the combined transmitted light beams may be determined via routine experimentation, in order to arrive at the stated goal of a controlled overlap of beams to reduce signal fluctuations at the receiver (see column 6, lines 16-22; and column 9, lines 29-36). In other words, Korevaar has recognized that the amount of overlap and width ratio is a variable for achieving a recognized result of reduced signal fluctuations.

Regarding claims 1 and 2, it would have been obvious to a person of ordinary skill in the art to specifically provide an amount of overlap such that the combined width of the beams is 1.5 times, 2 times, or more than a width of one beam in the system disclosed by Korevaar as an engineering design choice determined by a matter of routine experimentation to optimize the amount of the already-disclosed overlap.

Regarding **claim 4**, Korevaar further discloses that the plurality of light-emitting units emit light beams toward the other apparatus such that longer diameter direction axes of irradiation patterns of light beams from at least two of the plurality of light-emitting units intersect at the light-receiving unit. Beams 78a and 78b shown in Figure 5B, for example, diverge and intersect with beams 78c and 78d in the “longer diameter direction axes” at the receiver.

Regarding **claims 5 and 6**, Korevaar discloses that each of the light-emitting units includes a light source comprising a semiconductor laser 26 and an optical system which condenses light emitted from the light source (column 5, lines 16-39; column 6, lines 33-39).

Regarding **claim 7**, Korevaar suggests a free space optics communication apparatus as discussed above with regard to claim 1, and further discloses another apparatus (i.e., an opposing transceiver 16b as shown in Figure 2) which has a light-receiving unit (receiver 34, shown in Figure 3) which receives light beams irradiated from the free space optics communication apparatus

Response to Arguments

4. Applicant's arguments filed 25 October 2007 with respect to claims 1, 2, and 4-7 have been fully considered but they are not persuasive.

Examiner respectfully disagrees with Applicant's assertion on pages 4-6 of the response that Korevaar does not disclose or suggest overlapping beams in the way recited in the claims. Examiner respectfully maintains that Korevaar discloses that "irradiation patterns of light beams from at least two of the plurality of light-emitting units overlap in the shorter diameter direction of the irradiation pattern" as recited in claim 1 at least in the sense that they disclose an arrangement of two elliptical irradiation patterns 78a and 78b as shown in Figure 5B which, given the divergence of the beams expressly disclosed by Korevaar, eventually "overlap in the shorter diameter direction of the irradiation pattern" at the receiver. It is well understood in the optical art that a divergence of a beam as disclosed by Korevaar produces a beam spot that is spread out all around, whereby in the particular case disclosed by Korevaar, the elliptical beamspots shown in Figure 5B would comprise beamspots having similar elliptical shapes, only

Art Unit: 2613

bigger. Therefore, further away from the original transmission location, the pair of beams 78a and 78b disclosed by Korevaar diverge and inherently would comprise elliptical irradiation patterns that grow toward each other and eventually overlap “in the shorter diameter direction” of the elliptical shapes. The elliptical irradiation patterns 78c and 78d shown in Figure 5B also diverge and overlap in the shorter diameter direction of the irradiation pattern at the receiver

Examiner also respectfully disagrees with Applicant’s assertion on pages 7-8 of the response that Korevaar does not disclose light-emitting units with respective optical axes that are “inclined with respect to a reference axis of the free space optics communication apparatus.” Figure 5A shows light-emitting units 26a and 26b having optical axes that are “inclined” with respect to a reference axis of the communication apparatus, at least in the sense that the optical axis of the light emitting units are inclined by 90 degrees relative to a reference axis comprising the direction of light output from the apparatus shown in Figure 5A as a whole.

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Avakian (US 4,727,600 A) and **Laszlo et al.** (US 5,359,448 A) each generally disclose a free space optical communications apparatus including a plurality of light-emitting units having optical axes inclined with respect to a reference axis of the apparatus (Avakian, Figure 3; Laszlo et al., Figure 4A).

Einhorn et al. (US 4,753,506 A) generally disclose a free space optical communication apparatus including a plurality of light emitting units outputting overlapping elliptical irradiation patterns (Figures 1 and 3).

Art Unit: 2613

Kataoka et al. (US 5,134,426 A) generally disclose providing a plurality of light beams having overlapping irradiation patterns so that a substantially uniform light intensity distribution is obtained (Figures 1A-B and 2A-B; column 3, lines 14-26).


6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christina Y. Leung whose telephone number is 571-272-3023.

The examiner can normally be reached on Monday to Friday, 8:30 to 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan, can be reached on 571-272-3022. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 571-272-2600.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


CHRISTINA LEUNG
PRIMARY EXAMINER